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Email: sapiencebangalore@gmail.com

Report No.: SCE/BBMP/HB/17/2020-2021

Aggregate Impact Value

Date: 14.06.2021

Client	: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
Agency	: Sri. H B Rajendra, Contractor, Bangalore.
Name of the Work	Comprehensive development of Roads and Drains in Ward no 17 Rajarajeshwari Nagara Assembly Constituency Under PACKAGE - 2019-20-RRN-DIV(03), BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	387	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	301	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	21.19	21.82	**21.50**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

Note:

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BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	308	304	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	20.82	21.45	21.13

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Date: 14.06.2021

Aggregate Impact Value

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BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	89	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	293	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	23.30	22.66	22.98

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Aggregate Impact Value

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BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	303	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.34	21.71	22.02

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	299	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.50	22.14	21.82

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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SCE/BBMP/HB/17/2020-2021

Date : 14.06.2021

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

	: **Executive Engineer,** RR Nagar Division,BBMP, Bangalore.
	: **Sri. H B Rajendra,** Contractor, Bangalore.
Name of Work	Comprehensive development of Roads and Drains in Ward no 17 Rajarajeshwari Nagara Assembly Constituency Under PACKAGE - 2019-20-RRN-DIV(03), BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	10.5	10.8	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	11.7	10.9	
	Combined Flakiness & Elongation index	22.20	21.70	

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.6	11.7	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	10.8	10.5	
	Combined Flakiness & Elongation index	22.40	22.20	

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	10.4	10.7	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	11.6	11.80	
	Combined Flakiness & Elongation index	22.00	22.50	

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	10.9	11.4	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	11.2	10.5	
	Combined Flakiness & Elongation index	22.10	21.90	

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.9	10.6	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	10.1	11.3	
	Combined Flakiness & Elongation index	22.00	21.90	

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SCE/BBMP/HB/17/2020-2021

Date : 14.06.2021

ERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

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Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	10.4	11.7	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	11.2	10.1	
	Combined Flakiness & Elongation index	21.60	21.80	

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SC/BBMP/HB/17/2020-2021

Date : 14.06.2021

EXAMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

	: **Executive Engineer,** RR Nagar Division,BBMP, Bangalore.
	: **Sri. H B Rajendra,** Contractor, Bangalore.
Name of Work	Comprehensive development of Roads and Drains in Ward no 17 Rajarajeshwari Nagara Assembly Constituency Under PACKAGE - 2019-20-RRN-DIV(03), BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.6	10.8	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	10.3	11.6	
	Combined Flakiness & Elongation index	21.90	22.40	

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SCE/BBMP/HB/17/2020-2021

Specific Gravity And Water Absorption Test

Date : 16.06.2021

	: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
	: Sri. H B Rajendra, Contractor, Bangalore.
of the Work	Comprehensive development of Roads and Drains in Ward no 17 Rajarajeshwari Nagara Assembly Constituency Under PACKAGE - 2019-20-RRN-DIV(03), BBMP, Bangalore.
s Code	IS 2386(Part 3):1963
ype of Mix	Bituminous Concrete
ate of Testing	: 14.06.2021 to 16.06.2021

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2018	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1263	
4	Weight of saturated surface dry aggregate in air	W_3 g	2013	2015	2017	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	748	748	754	
6	Weight of oven dried aggregate	W_4 g	2004	2006	2008	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.679	2.682	2.663	2.675
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.712	2.714	2.695	2.707
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.45%	0.45%	0.45%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಯಶವಂತಪುರ ಉಪ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

For SAPIENCE CONSULTANTS

Priya

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SCE/BBMP/HB/17/2020-2021

Aggregate Gradation Test
IS : 2386 Part I

Date : 14.06.2021

	: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
	: Sri. H B Rajendra, Contractor, Bangalore.
of the Work	Comprehensive development of Roads and Drains in Ward no 17 Rajarajeshwari Nagara Assembly Constituency Under PACKAGE - 2019-20-RRN-DIV(03), BBMP, Bangalore.
s Code	IS 2386(Part 1):1963
ample I / D	Hot Mix Plant, Bangalore
ype of Mix	Bituminous Concrete
Date of Testing	14.06.2021

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	325	6.50	6.50	93.50	90 - 100	
9.5	457	9.14	15.64	84.36	70 - 88	
4.75	713	14.26	29.90	70.10	53 - 71	
2.36	657	13.14	43.04	56.96	42 - 58	
1.18	506	10.12	53.16	46.84	34 - 48	
0.600	524	10.48	63.64	36.36	26 - 38	
0.300	471	9.42	73.06	26.94	18 - 28	
0.150	365	7.30	80.36	19.64	12 - 20	
0.075	549	10.98	91.34	8.66	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	316	6.32	6.32	93.68	90 - 100	
9.5	518	10.36	16.68	83.32	70 - 88	
4.75	709	14.18	30.86	69.14	53 - 71	
2.36	631	12.62	43.48	56.52	42 - 58	
1.18	524	10.48	53.96	46.04	34 - 48	
0.600	516	10.32	64.28	35.72	26 - 38	
0.300	648	12.96	77.24	22.76	18 - 28	
0.150	326	6.52	83.76	16.24	12 - 20	
0.075	357	7.14	90.90	9.10	4 - 10	

Note:

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SCE/BBMP/HB/17/2020-2021

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Aggregate Gradation Test
IS : 2386 Part I

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Total Weight of Sample:	5000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	326	6.52	6.52	93.48	90 - 100	
9.5	411	8.22	14.74	85.26	70 - 88	
4.75	753	15.06	29.80	70.20	53 - 71	
2.36	651	13.02	42.82	57.18	42 - 58	
1.18	519	10.38	53.20	46.80	34 - 48	
0.600	532	10.64	63.84	36.16	26 - 38	
0.300	467	9.34	73.18	26.82	18 - 28	
0.150	435	8.70	81.88	18.12	12 - 20	
0.075	572	11.44	93.32	6.68	4 - 10	

Total Weight of Sample: 5000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	313	6.26	6.26	93.74	90 - 100	
9.5	522	10.44	16.70	83.30	70 - 88	
4.75	741	14.82	31.52	68.48	53 - 71	
2.36	628	12.56	44.08	55.92	42 - 58	
1.18	534	10.68	54.76	45.24	34 - 48	
0.600	521	10.42	65.18	34.82	26 - 38	
0.300	649	12.98	78.16	21.84	18 - 28	
0.150	316	6.32	84.48	15.52	12 - 20	
0.075	417	8.34	92.82	7.18	4 - 10	

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